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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/537,417
Filing Date: June 02, 2005
Appellant(s): SATOH ET AL.

Kevin M. Mckinley
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/20/2008 appealing from the Office action mailed 3/26/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

JP2002-259095	Shigeki et al.	9-2002
JP11-212725	Yoshitaka et al.	8-1999
US2003/0205450	Divigalpitiya et al.	5-2002
US6,422,757	Wu et al.	12-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigeki et al.** (JP Pub. 2002-259095) in view of **Yoshitaka et al.** (JP Pub. 11-212725) and in further view of **Divigalpitiya et al.** (US Pub. 2003/0205450).

As to claim 1, Shigeki et al. discloses an input apparatus that outputs coordinate values of an operation surface that the user has pressed as an input operation ([0040]), deforms the operation surface (fig. 6), and causes the user to feel a force sense as a feedback with the deformed operation surface ([0040]), comprising:

a deformation mechanism portion that deforms the operation surface (fig. 6);

a press force detection portion that detects whether the operation surface has been pressed ([0040]); and

a control portion ([0046]) that controls said deformation mechanism portion to start driving the actuator to gradually deform the operation surface in one direction and then in the reverse direction ([0040]).

Shigeki et al. does not explicitly teach the control portion that controls a piezoelectric actuator and period for deformation in one direction is larger than in the reverse direction.

Yoshitaka et al. teaches a control portion ([0020]) that controls deformation mechanism portion to start driving the piezoelectric actuator to gradually deform the operation surface in one direction and then in the reverse direction ([0050] – [0051], [0001] – [0002]), and

a piezoelectric device that detects an operation input position (abstract, [0126] – [0128]).

Yoshitaka et al. does not teach whether the piezoelectric element is a bi-morph device.

However, it is well known in the art that most piezoelectric actuators are composed of piezoelectric bi-morph device.

Therefore, it is obvious to one skill in the art at the time of the invention was made to include the piezoelectric element of Yoshitaka et al. into the input device of Shigeki et al. to make a piezoelectric actuator in order to let user feel a force sense as a feedback and detect an operation input position.

Shigeki et al. (as modified by Yoshitaka et al.) does not teach a period for which the operation surface is deformed in one direction is sufficiently larger than a period for which the operation surface is deformed in the reverse direction when said press force detection portion detects that the operation surface has been pressed.

Divigalpitiya et al. discloses the period for activate the operation (surface is deformed) in one direction is sufficiently larger than the period for which the operation surface is deformed in the reverse direction (restore the original position)(page 3, [0033]).

Therefore, it is obvious to one skill in the art at the time of the invention was made to combine the pressure activation device of Divigalpitiya et al. with the input device of Shigeki et al. (as modified by Yoshitaka et al.) to make a piezoelectric actuator in order to allow user to feel a click sense as a feedback with maximum deformation amount of the touch panel and low power consumption.

As to claim 2, Shigeki et al. (as modified by Yoshitaka et al. and Divigalpitiya et al.) teaches an input apparatus with the period for deformation in one direction is larger than in the reverse direction)(page 3, [0033], in Divigalpitiya et al.)..

Shigeki et al. (as modified by Yoshitaka et al. and Divigalpitiya et al.) does not teach the maximum deformation amount of the operation surface.

However, it is obvious for an input apparatus when the maximum deformation amount of the operation surface deformed by said deformation mechanism portion is 200 micro-meter or less, the period for which the operation surface is deformed in one direction is 33 times or more than the period for which the operation surface is deformed in the reverse direction.

As to claim 3, it is obvious for an input apparatus wherein the period for which the operation surface is deformed in the first direction is 200 msec or less.

As to claim 4, it is obvious that an input apparatus comprising:

a deformation amount set portion that sets the deformation amount of the panel surface corresponding to setting of the user,

wherein said control portion deforms the operation surface corresponding to setting of the deformation amount of the operation surface.

As to claim 5, Yoshitaka et al. discloses an input apparatus wherein said control portion gradually increases or decreases a drive voltage of the piezoelectric actuator

always corresponding to the same waveform and varies the period for which the drive voltage increases or decreases corresponding to the waveform to vary the deformation amount of the operation surface in one direction ([0024] – [0025]).

As to claim 6, it is obvious that an input apparatus wherein said control portion controls said deformation mechanism portion to keep the operation surface deformed in the reverse direction until said press force detection portion detects that the operation surface has been pressed.

As to claim 7, it is obvious for an input apparatus wherein said control portion controls said deformation mechanism portion to deform the operation surface in the reverse direction for a predetermined period and the operation surface for a period sufficiently longer than the predetermined period so that the voltage applied to the piezoelectric actuator becomes 0 V when said press force detection portion detects that the operation surface has been pressed.

As to claim 9, Yoshitaka et al. discloses an input apparatus comprising: a display portion that transmits the operation surface and displays a screen, wherein when an operation function item displayed on said display portion is pressed through the operation surface, the operation function item is selected and input ([0010]).

As to claim 10, Yoshitaka et al. teaches an input apparatus relates to a portable electronic apparatus ([0001]).

As to claim 11, Yoshitaka et al. teaches an input apparatus relates to a remote control apparatus ([0001]).

Claim 12 is rejected the same as claim 1 above.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigeki et al.** (JP Pub. 2002-259095) in view of **Yoshitaka et al.** (JP Pub. 11-212725) and in further view of **Divigalpitiya et al.** (US Pub. 2003/0205450) and **Wu et al.** (US. Patent 6,422,757).

As to claim 8, Shigeki et al. (as modified by Yoshitaka et al. and Divigalpitiya et al.) teaches an input apparatus with spacer (see [0009] – [0010] in Shigeki et al.).

Shigeki et al. (as modified by Yoshitaka et al. and Divigalpitiya et al.) does not explicitly introduce a piezoelectric actuator with first, second, and third spacers.

Wu et al. discloses a piezoelectric actuator with three spacers (col. 3, line56 – col. 4, line 14).

Therefore, it is obvious to one skill in the art at the time of the invention was made to use the idea of Wu et al. of using more than one spacer to make a piezoelectric actuator with the input device of Shigeki et al. (as modified by Yoshitaka et al. and

Divigalpitiya et al.) to make a piezoelectric actuator with the desired arrangement of spacers in order to create gap.

Also, it is a design choice to make a piezoelectric actuator that is curved in the direction perpendicular to the surfaces on which three spacers are disposed so as to vary the distance between the front surface of the first spacer and the front surface of the second and third spacers and deform the operation surface.

(10) Response to Argument

On page 5, 3rd paragraph of the Appeal Brief, Appellant argues that **Shigeki does not teach or suggest a control portion that controls the deformation mechanism to start driving the piezoelectric actuator to deform the operation surface in one direction and then in another direction.** The Examiner respectfully disagrees with this statement. Shigeki teaches an input device where a control portion ([0046]) that controls deformation mechanism portion to start driving the actuator to gradually deform the operation surface in one direction (pressed by finger) (fig. 4) and then in the reverse direction (back to original position when not pressed) ([0040]). Shigeki does not specifically teach that the input device is a piezoelectric actuator. However, Yoshitaka discloses a control portion ([0020], [0042]) that controls deformation mechanism to start driving the piezoelectric actuator to deform the operation surface in one direction and then in the reverse direction ([0050] – [0051]). Thus Shigeki (as modified by Yoshitaka) clearly teaches a control portion that controls

the deformation mechanism to start driving the piezoelectric actuator to deform the operation surface in one direction and then in another direction.

On page 5, 4th paragraph of the Appeal Brief, Appellant asserts, "**The outstanding Office Action also refers to paragraphs [0020] and [0046] in Shigeki....**". The Examiner strongly and respectfully disagrees with this assertion. The Office Action does not refer to [0020] in Shigeki, but it refers to [0020] in Yoshitaka.

On page 5, 2nd paragraph of the Appeal Brief, Appellant states, "**The control portion controls these operations such that a period of deformation in one direction is sufficiently larger than the period in which the operation surface is deformed in the reverse direction. As such, the control portion drives the deformation in two directions. The applied art does not teach or suggest these features. The Examiner respectfully disagrees with this assertion.**" The Examiner again respectfully disagrees with these assertions. Divigalpitiya discloses the period for activate the operation (surface is deformed) in one direction is sufficiently larger than the period for which the operation surface is deformed in the reverse direction (to restore the original position) (page 3, [0033]). Thus Shigeki (as modified by Yoshitaka and Divigalpitiya) teaches a control portion that controls operations such that a period of deformation in one direction is sufficiently larger than the period in which the operation surface is deformed in the reverse direction.

Therefore, all the claim limitations of claim 1 and 12 are taught by Shigeki (as modified by Yoshitaka and Divigalpitiya) as discussed above.

On page 7, 2nd paragraph of the Appeal Brief, Appellant argues regarding dependent claim 8 that **Wu does not cure any of the above noted deficiencies of Shigeki, Yoshitaka, and Divigalpitiya.** The Examiner respectfully disagrees with this statement. Claim 8 is dependent on rejected claim 1. Claim1 limitations are clearly taught by Shigeki, Yoshitaka, and Divigalpitiya as discussed above. Hence claim 8 is rejected like all other dependent claims as being dependent on rejected claim 1.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Afroza Y Chowdhury/

Examiner, Art Unit 2629

Conferees:

**/Bipin Shalwala/

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